Development of Analytical Tools to Process and Apply Digitally Scanned Anthropometric Data

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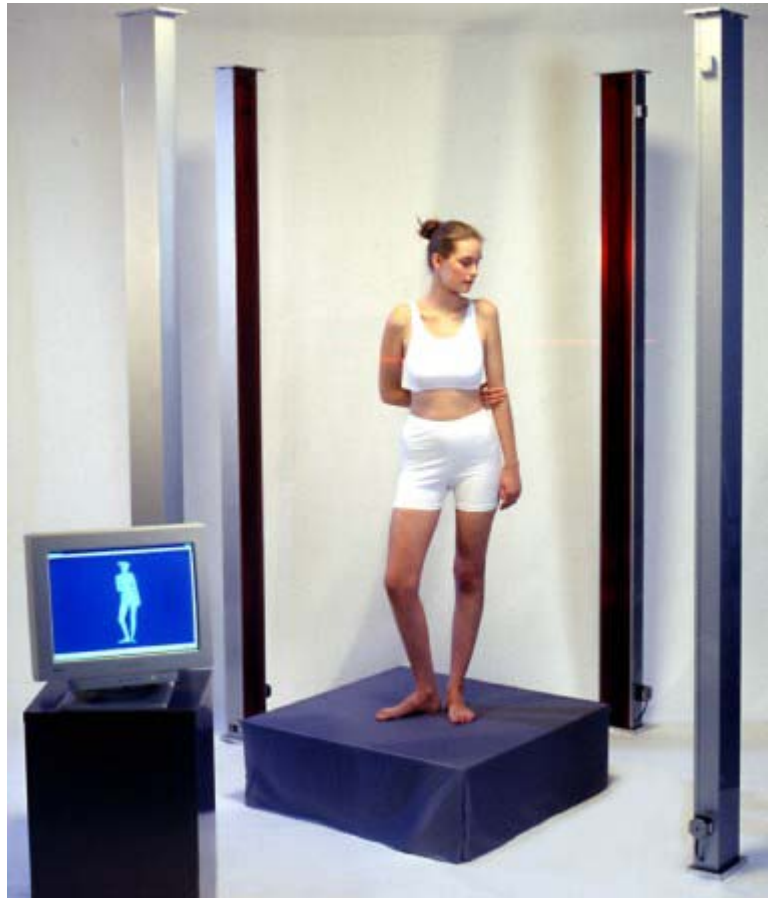
PURPOSE

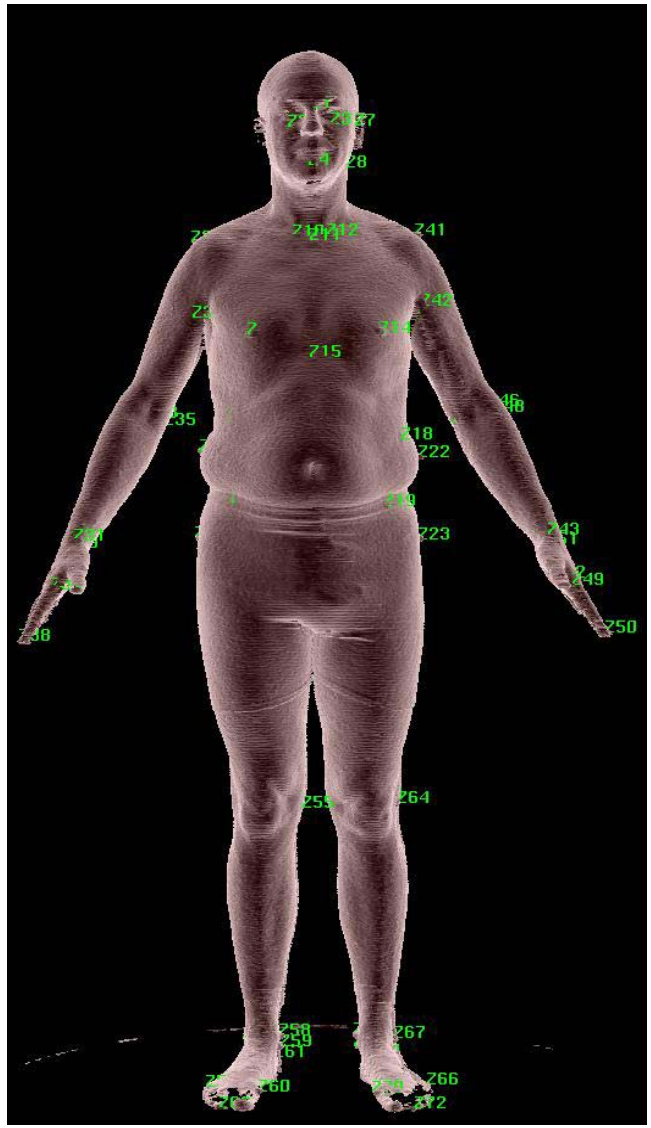
- **Enhance the capabilities of the Anthropometry and Biomechanics Facility (ABF), specifically in the areas of gathering surface and volumetric data and developing analytical tools based on three-dimensional anthropometric data.**
- **Conventional method of gathering data and handling data are limited and often irrelevant for identifying crew-hardware compatibility issues.**
- **Acquire state-of-the art whole body scanner technology.**
- **Develop software tools to incorporate multi-dimensional, whole-body, posture-specific, population-dependent anthropometric data.**

Traditional Anthropometers and Goniometers are used for manual measurements



New 3-D Body Scanner

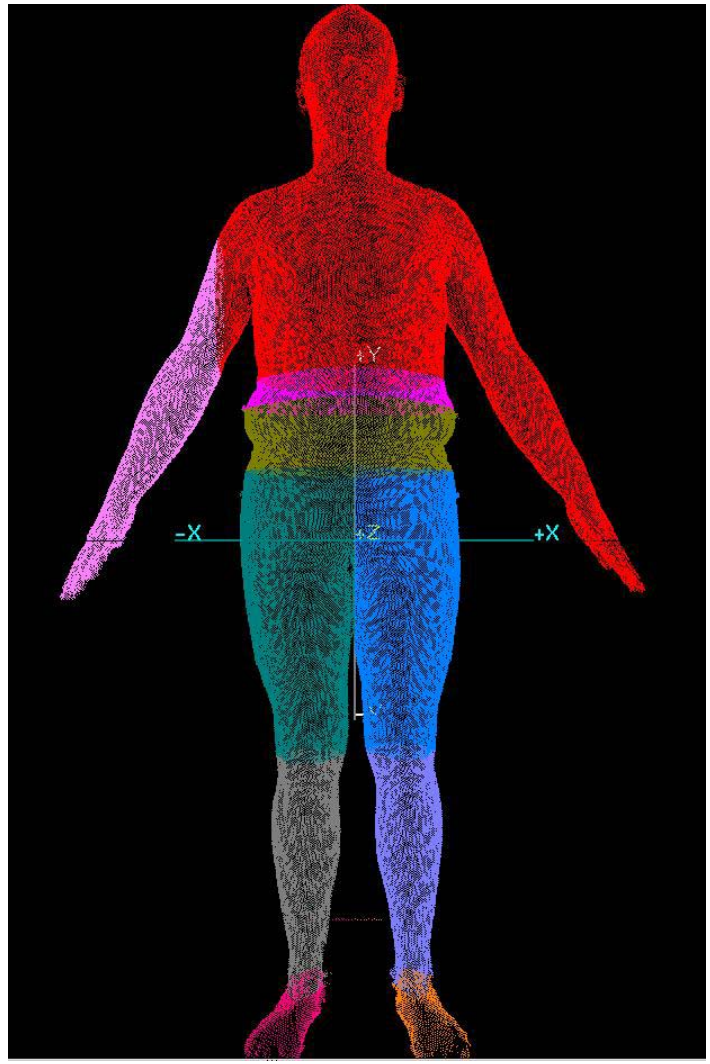
Manual Measurements



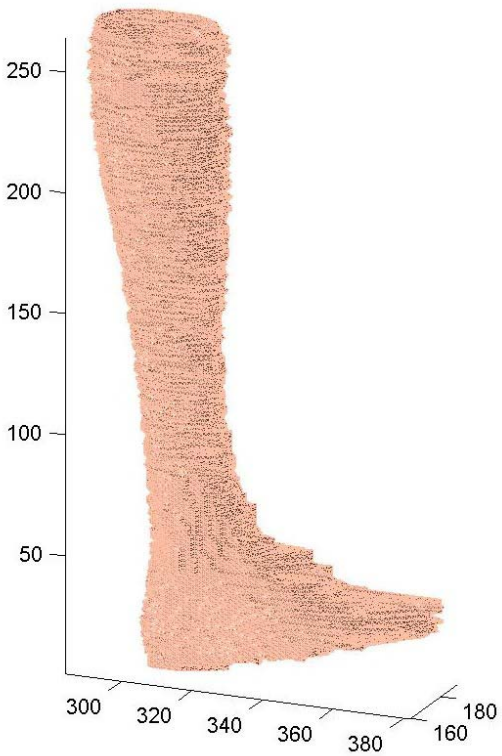
Scanned Measurements

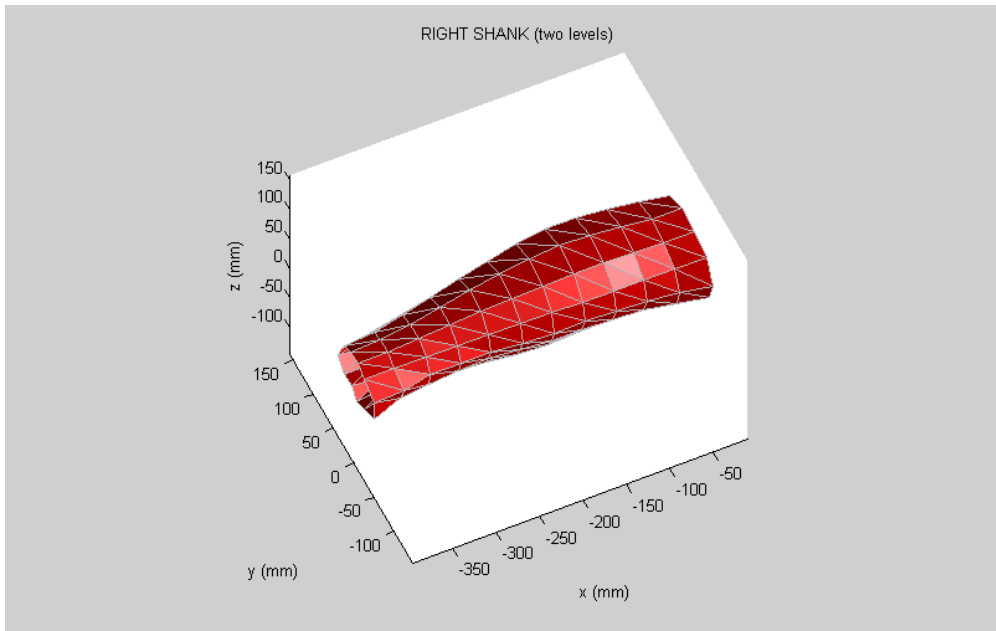
Immediate Goals

- Segment the body at different anatomical locations.
- Add new landmarks to segment the body at the new landmark locations
- Re-link the segmented parts together for movement at the joint centers.

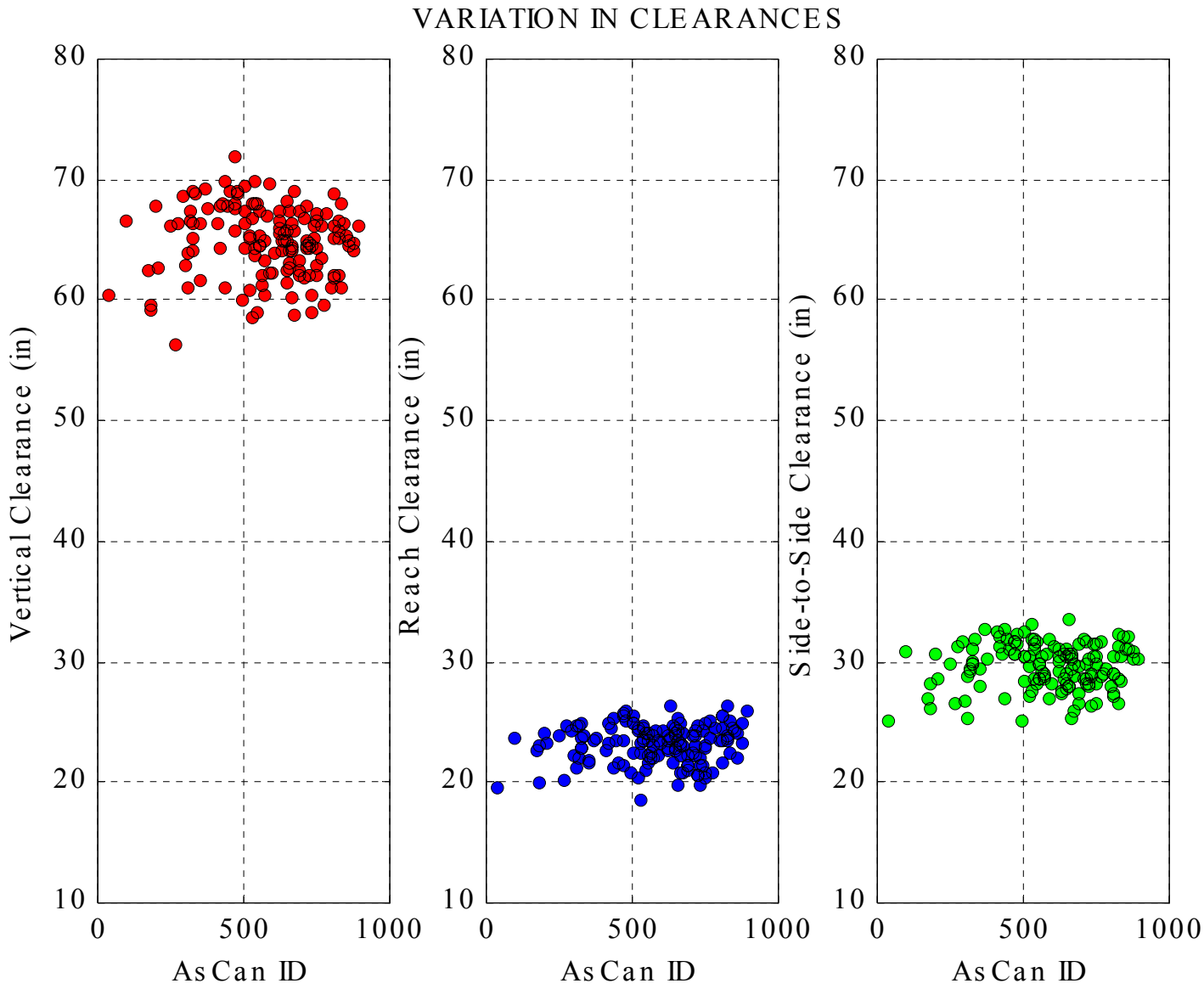


Accomplishments so far

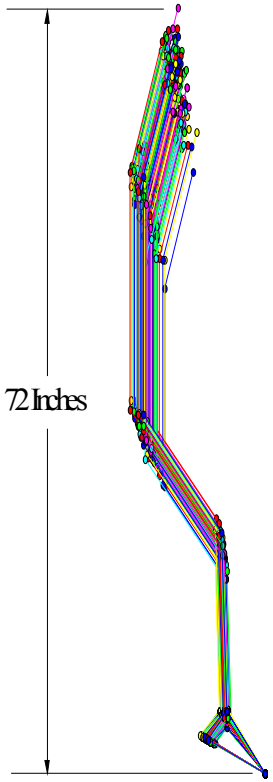


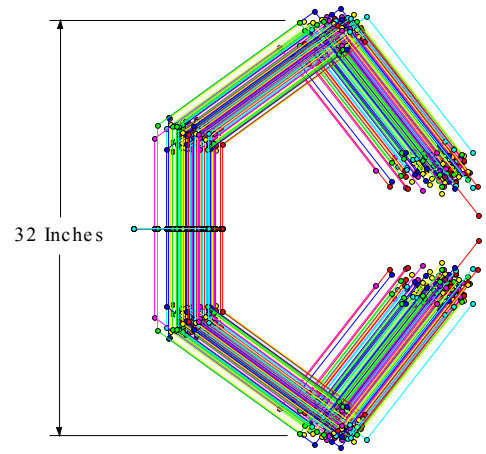


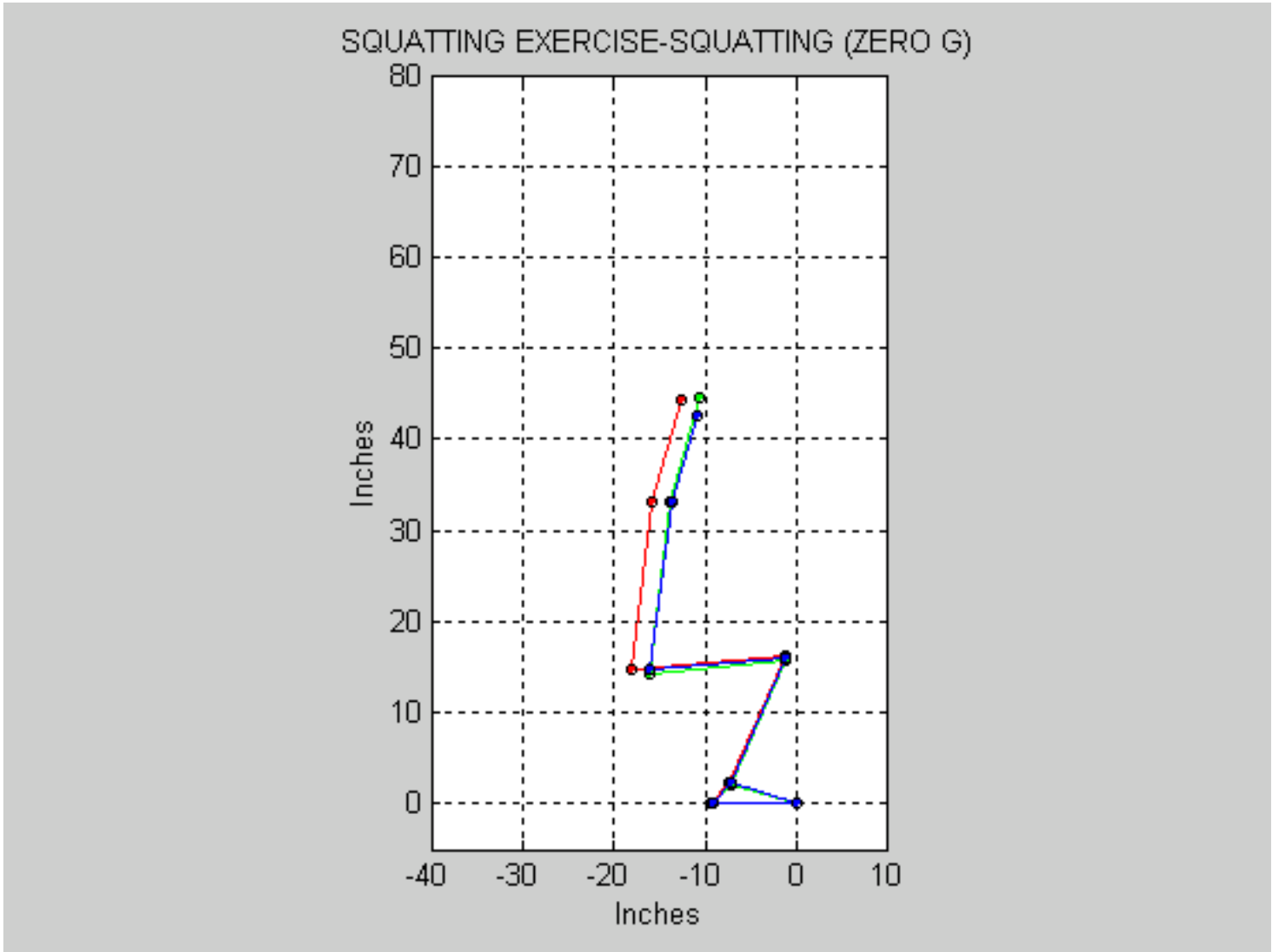
Examples of Whole Body Posture Specific Anthropometric Analysis

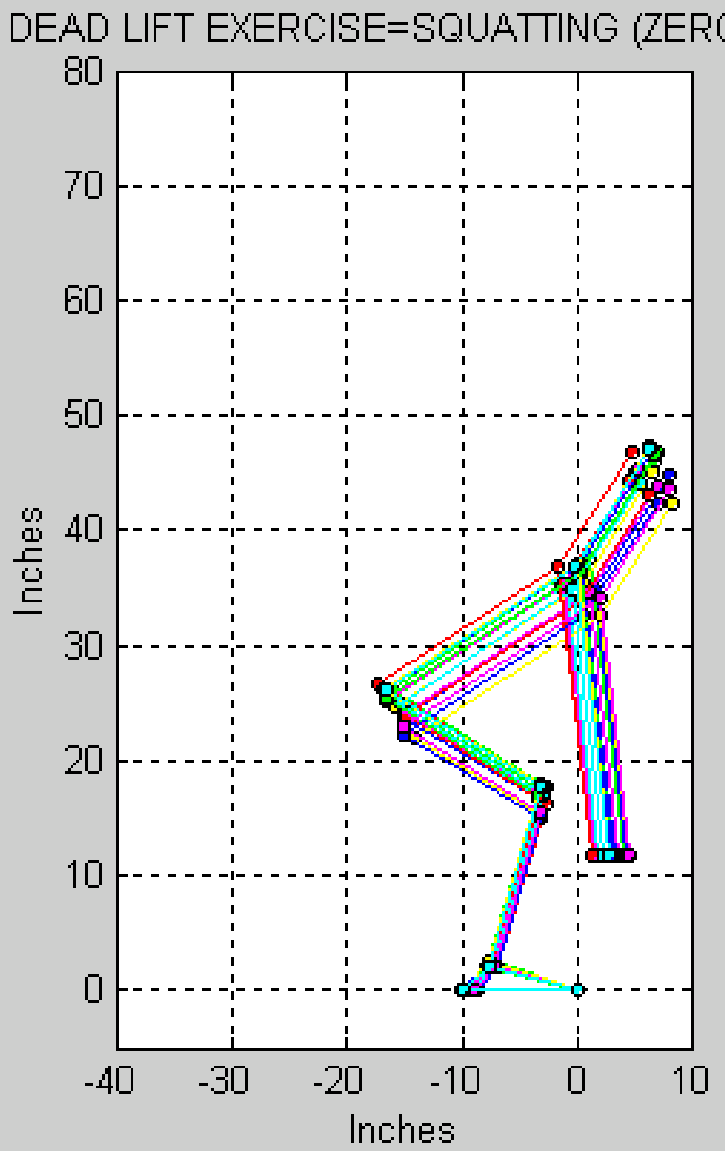


Astronaut Candidates


72 Inches


32 Inches


SQUATTING EXERCISE-SQUATTING (ZERO G)
80
70
60
50
40
30
20
10
0
Inches
-40
-30
-20
-10
0
10
Inches


DEAD LIFT EXERCISE=SQUATTING (ZERO G)
80
70
60
50
40
30
20
10
0
Inches
-40
-30
-20
-10
0
10
Inches